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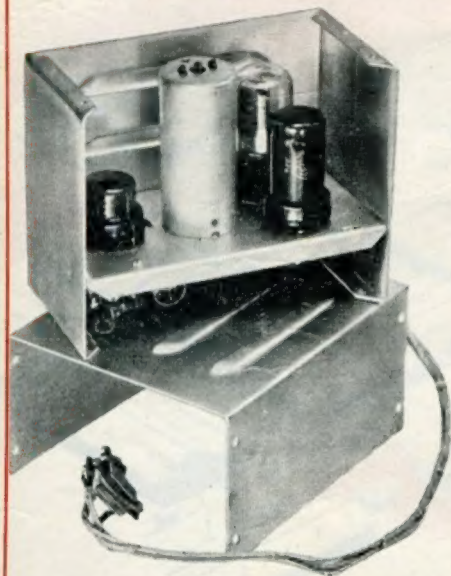
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# AMATEUR RADIO

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## EDITORIAL



Elsewhere in this issue appears a complete schedule of frequencies now available for use by the Australian Amateur. The latest additions to this list are as follows:—

288-296 M.c. and  
576-585 M.c.

The use of these frequencies involve techniques and apparatus which will occupy the attention of all serious workers for a long time to come.

The Radio Society of Great Britain has produced an interesting handbook on micro-wave technique, an advance copy of which has come to hand, and which will doubtless serve as a suitable introduction to most of us. In this connection, the Federal Executive have written the R.S.G.B. Headquarters requesting that a copy of the book be forwarded to each Division for perusal. Arrangements are also being made to enable mem-

bers to obtain their own personal copies thereafter.

Operation of these new frequencies will rest very much on new tubes that have lately been developed in Great Britain, and which have amazing performance, yielding as they do their full output on these frequencies. Disposals' equipment, at present available, does not appear to cover these frequencies, but here again the ingenuity of the serious worker will overcome these obstacles.

The bands will doubtless be opened up on the basis of "Optical Range," but who knows where they will finish! Steady application to the problems involved will enlarge our knowledge of ultra-high frequency work, and fit us for service in many important technical applications should the national need ever require it.

—P.E.

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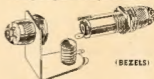


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# Double Conversion Receiver

BY C. C. WARING, VK3YW

Saturday morning, 2nd September, 1939, all Hams received a long telegram and we were off the air. After pottering about for a week or two, the writer decided the best way to fill in the spare time was to build the receiver he had always dreamed about.

**DESIGN** Before gathering up all the bits and pieces a few thoughts on paper seemed to be in order to solidify all the ideas that had been disturbing the night's sleep.

- 1—General coverage and Ham band tuning from 3.5 to 28 Mc.
- 2—Ample band spread on 3.5, 7, 14 and 28 Mc. bands.
- 3—R.F. stage ahead of converter to give good signal-to-noise ratio.
- 4—I.F. stages sufficient to give good selectivity and ample image ratio.
- 5—Ample gain to give proper a.v.c. action.
- 6—Crystal filter with variable selectivity and rejection controls on the panel.
- 7—A satisfactory noise silencer or limiter with threshold adjustment on panel.
- 8—Signal meter (optional).
- 9—A.V.C. with cut-out switch on the panel for c.w.
- 10—B.F.O. with cut-out switch on panel.
- 11—Separate r.f. and a.f. gain controls.
- 12—Plug-in coils for simplicity and low losses.
- 13—Band-set condensers brought out to front of panel for easy adjustment.
- 14—Standby switch in B+ lead so that receiver can be switched off during transmitting periods.
- 15—Headphone jack and externally-mounted speaker.
- 16—Doublet antenna connections.
- 17—Complete shielding to minimise stray r.f. pick up.
- 18—Strong chassis construction for stability.
- 19—External power supply to minimise heat production and frequency drift in receiver.

Quite an imposing list when one writes it down, but not so hard to satisfy when you get down to tin tacks. Perhaps before the reader goes any further, and feels that a receiver containing 13 tubes and strings of tuned circuits would be too complicated and touchy to get going and to keep lined up, let him remember that most of the tuned circuits are in the i.f.s, and once peaked need not be touched for many a day, there is nothing complicated about the receiver. All circuits are straight-forward, even the noise silencer chosen is amenable to simple explanation without any hair-pulling maths; anyway let's look at the circuit and see how she goes.

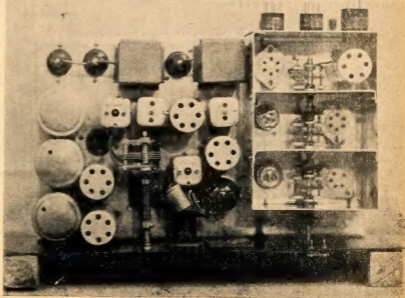
**I.F. CHANNELS** A glance at the circuit diagram will show that basically the receiver is a superheterodyne using two intermediate frequencies, of course there is nothing new in this; the idea, I believe, was included in Armstrong's original patents, and is used universally with the various h.f. converters on the market at present. The use of an i.f. of 465 or 455 Kc. is a compromise between the selectivity and high gain to be obtained at low frequencies and image ratio. It is well known that low i.f.s. do not give adequate image ratios at high frequencies and that higher i.f.s. are less selective but give better image ratios, so it seems the obvious thing to use both.

A frequency of 1600 Kc. was selected as the first i.f., this will give adequate image ratio on 28 Mc. Any of the popular i.f.s. on the market round about this frequency may be used; 1.9 Mc. i.f. should be excellent. The second i.f. presents itself as a problem which can have a number of answers. For c.w. work a crystal filter of 465 Kc. or thereabouts, works out very nicely, and as the diagram shows I use two stages of i.f. following the crystal, not to get increased gain (one stage will give you plenty), but to give increased selectivity. The increase in selectivity given by the extra stage, especially when it is cut back as shown, is well worth while.

If you have no crystal, don't intend to get one, or if you are only interested in phone, an i.f. of 175 Kc. will give you

much sharper tuning than the plain 465 Kc. stages. At the lower i.f. you will have so much gain to pour down the sink that instead of using single i.f. transformers between stages you can use two transformers (back to back and coupled through a small condenser of 3-4 pF.) to give a bandpass effect. This will undoubtedly mean shaving cycles off the frequency response, but at the same time will cut out many of those ever-present heterodynes.

At this stage, no doubt, somebody has wondered about the possibility of harmonics or beat frequency response, from the three oscillators employed, getting into the front end; this admittedly could be a problem. It was tackled in this receiver firstly by thorough shielding of all oscillator circuits. The shielding shown round the front end is carried down under the chassis and finished off with a cover-plate; the second converter oscillator and the b.f.o. valves, coils and sockets are both well shielded above and below the chassis with all by-pass condensers inside the shields. Secondly, by the use of low voltages on the b.f.o. and second oscillator; and thirdly, by choosing a frequency for the second oscillator (which has the chance of being the biggest nuisance) which keeps it clear of the lower frequency Amateur bands. In this receiver this oscillator runs on 2065 Kc. and does not meet up with an Amateur band until it reaches the 28 Mc. band, but harmonics seem to be conspicuous by their absence at the lower frequencies.

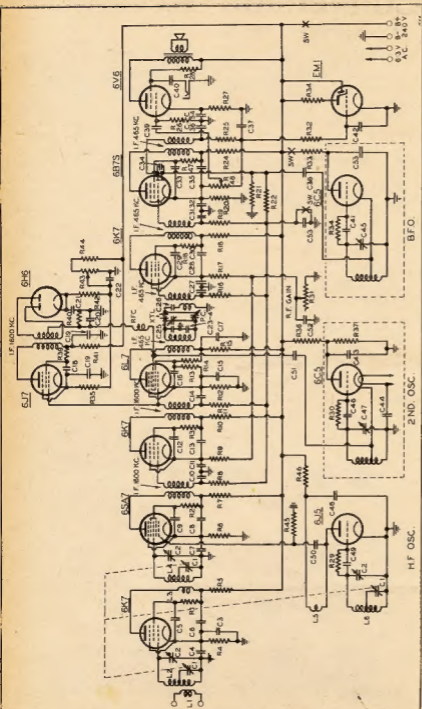


Top view showing lay out of R.F., I.F. and location of band spread condensers.

**NOISE SILENCER** The noise silencer will probably be called complicated—frankly it is not—and goes back to Lamb's noise silencer of 1932. "A noise silencer is a device which, when properly adjusted, will disable the receiver during high amplitude noises of short duration and prevent their passing on to other parts of the circuit where overloading can occur, and produce secondary effects which completely spoil reception."

In the noise silencer shown, the silencing action takes place in the second converter (a 6L7). In addition to the silencer-converter tube, use is made of a 6J7 as a noise amplifier (connected in parallel to the 6L7) coupled by a noise transformer to a 6H6 noise rectifier. The coupling transformer will need to be labor-made and consists of a tuned plate coil (1600 Kc.) and an untuned centre-tapped secondary. It was made by stripping the original 1600 Kc. secondary off and replacing by winding 60 turns of 28 gauge silk covered wire as close as possible to each side of the primary.

Operation is as follows. The noise is amplified by the 6J7 and rectified by the 6H6. The pulsating d.c. voltage developed by rectification across the diode resistor is applied through r.f.c. to the No. 1 (injection) grid of the 6L7; the resulting increase of bias will stop conversion, not for long of course as the noise pulses are of short duration and



- R1, R2, R3, R8, R11, R14, R16, R18, R19, R39, R40, R47—0.1 Meg., ½ watt.  
 R4, R9, R35—500 Ohms, 1 watt.  
 R5, R7, R10, R15, R18, R20, R24, R25—3,000 Ohms, 1 watt.  
 R6—250 Ohms, 1 watt.  
 R12—2,000 Ohms, 1 watt.  
 R13, R30, R33, R34, R39—50,000 Ohms, ½ watt.  
 R17—1,000 Ohms, 1 watt.  
 R21, R34—2 Meg., 1 watt.  
 R22—1 Meg., ½ watt.  
 R26—0.5 Meg., ½ watt.  
 R27—250 Ohms, W.W.  
 R28—0.2 Meg.  
 R31, R43—3,000 Ohms, W.W. Pot.  
 R32—3 Meg., ½ watt.  
 R36, R44—30,000 Ohms, 1 watt.  
 R37—10,000 Ohms, 1 watt.  
 R41—4,000 Ohms, 1 watt.  
 R42—0.25 Meg., ½ watt.  
 R45—20,000 Ohms, ½ watt.  
 R48—25,000 Ohms, 1 watt.  
 R49—0.5 Meg. Pot.  
 C1—Three 30 pF. band spread ganged.  
 C2—100 pF. band set.  
 C3, C4, C6, C7, C8, C9, C10, C11, C12, C13, C14, C16, C17, C18, C19, C39, C40—0.01 uF.  
 C5—0.005 uF.  
 C15, C21, C27, C29, C30, C31, C33, C35, C42, C43, C44, C48—0.05 uF.  
 C20, C25, C26, C50, C51—50 pF.  
 C22, C52—0.5 uF.  
 C23, C24, C34, C36, C37, C41, C46, C49—100 pF.  
 C28—0.1 uF.  
 C32, C54—25 uF.  
 C38—1 pF.  
 C53—0.02 uF.  
 C45, C47—465 Kc. Padders.  
 P.C.—Three Plate Midgel.

punch a short-time hole in the signal (so short that the ear is not aware of it). Capacity transfer of strong signals are eliminated in this arrangement as the plate and grid circuits of the 6L7 are related only by conversion.

To aid in the silencing action the oscillator injection voltage is made small by running the oscillator at low voltage and the 6L7 is operated at high bias and low screen voltage to reduce the conversion gain. The start of the silencing action is controlled by the resistor R43 which acts as a threshold control by varying the cathode bias on the 6J7 and 6H6.

It will be noticed that the silencer is ahead of the crystal filter; in this position apart from the fact that the silencer operates better by being in a comparatively unselective part of the receiver, it cuts out those annoying pings a crystal filter delights to give out when hit by a sharp noise peak.

## CRYSTAL FILTER

The crystal filter is easy to make and does not cause a drop in the signal to any extent when switched in, although it does give the impression of loss of sensitivity due to the marked cutting down of background noise. Noise in receivers is directly related to band-width and it is only logical that when the band-width is cut (and cut severely when the crystal goes in) that the background noise will drop.

As in the noise silencer a little simple tailoring is necessary for both input and output transformers of the crystal filter. The input transformer consists of an ordinary 465 Kc. i.f. transformer with the 100 pF. fixed condenser across the secondary removed and replaced by two condensers of similar capacity connected in series and shunted across the coil. The centre connection between these condensers is earthed to give a centre tap effect for the input circuit, the remaining 50 pF. capacity is made up by condenser C25 across the input circuit. This resonates the whole circuit at the i.f. frequency when the crystal is shorted out, and acts as a selectivity control when the filter is in operation; selectivity increasing as the condenser is tuned away from resonance (for the theory of this see past issues of "Amateur Radio" or the R.S.G.B. "Radio Amateur's Handbook").

The output transformer consists of an air-core i.f. from the junk box. One coil was stripped off, and 35 turns of 30 gauge enamel wire (which happened to be handy) were scramble-wound as close to the remaining coil as possible. This gives a step up effect from the filter and a better impedance match. Phasing condenser P.C. consists of a 3 plate midget with the crystal shorting switch attached to the shaft. This switch consists of a piece of copper wire soldered to the shaft and a small piece of copper or brass strip bolted to the isolantite back plate to make a wiping contact. Both the phasing condenser and the selectivity control condenser are brought out to the front panel through insulated couplings, necessary in this case as both sides of the condensers are hot.

**AUDIO SECTION** The audio end may cause a slight amount of eyebrow lifting due to its apparent lack of gain, but the writer does not think it necessary to have four, five or more wats of audio worrying the family and neighbours. The 6V6G as shown operates with a screen voltage of 100 and has an output of 1.5 watts with a load of 14,000 ohms. 1.5 watts gives ample volume and enables me to listen to VK3WI while I chop the wood outside, and perhaps better still it only takes an input voltage of 5 volts to drive it. As there is plenty of gain ahead of the diode it has no difficulty in delivering the output necessary.

Another convenient aspect of the 200,000 ohm resistor in the 6V6G screen lead is that it makes a handy audio choke to plug the phones in between screen and earth (through a blocking condenser of course). Taking the phone output from the screen gives a nice balance between headphone output and speaker level; by this I mean that when the speaker is plugged in, it is not necessary to turn the audio gain up.

**A.V.C.** This is applied to the three i.f. amplifier tubes and the second converter, which gives ample control and a fairly steady output over a wide range of signals. It is not applied to the r.f. amplifier ahead of the 6SA7 as this tube is run flat out at all times to get as good a signal-to-noise ratio as possible.

The r.f. stage was originally coupled into the a.v.c. line and also to the r.f. gain control because it was thought that overloading would occur with strong signals. Experience disproved this idea and it was allowed to operate at maximum ratings at all times with an improvement in signal-to-noise ratio.

COIL TABLE  
3.5 Mc. Band

Coil	Turns	Wire	Length	Band Set approx.
L1	7	26"	close-wound	
L2	27	"	"	
L3	7	"	"	
L4	27	"	"	
L5	7	"	"	
L6	15	"	"	70%
7 Mc. Band				
L1	4	30"	close-wound	
L2	15	30"	"	
L3	5	30"	inter-wound with L4	
L4	15	30"	"	
L5	5	30"	close-wound	
L6	10 1/2	30"	"	51 60%
14 Mc. Band				
L1	4	30"	close-wound	
L2	6 1/2	26"	"	3 1/2
L3	4	30"	inter-wound with L4	
L4	6 1/2	26"	"	3 1/2
L5	3 1/2	"	"	
L6	6	22"	"	3 70%
28 Mc. Band				
L1	3	30"	close-wound	
L2	3	"	"	
L3	3	"	inter-wound with L4	
L4	3	"	"	
L5	2	"	close-wound	
L6	2 1/2	26"	"	1 40%

\* Enamel

† D.S.C.

**BAND SPREAD** An essential feature in any Ham receiver is band spread which is obtained by the tapped coil method. The band-set condensers are 100 pF. variable condensers across the whole coil, the band spread condensers, which are ganged to the main tuning dial, consist of 0-30 pF. variables tuned across varying portions of the grid coils as shown in the coil table. Other methods could of course be used but the one shown is simple to adjust and gives no trouble.

**COILS** The second oscillator coil and the b.f.o. coil are both home-made and consist of electron-coupled oscillators with plenty of capacity for stability. Both tuning condensers consist of 405 Kc. padder condensers (variable) and run I believe up to about 800 pF.

The second oscillator coil contains 20 turns of 26 gauge d.c.c. wire wound on a 1 1/2" former, cathode tap is 5 turns from the cold end. The padder condenser is strapped across the top of the former with its adjusting screw upward and a hole is drilled in the coil shield to enable it to be reached by a screw driver for adjustment of frequency.

The b.f.o. coil is made in a similar manner but contains 90 turns of 30 gauge enamel tapped a quarter of the way up from the cold end. Of course a commercial unit could be substituted here, but personally I prefer it possible to make my own.

The coil table is probably remarkable for the variety of wire gauges used, but the wire used just happened to be that on hand. The aerial coils (L1 and L2) on 3.5 Mc. band are wound with a space of 1/16" between them; on 7, 14 and 28 Mc. bands the aerial coil L1 is wound as close to the secondary as possible. On 3.5 Mc. the primary L3 of the r.f. transformer is over-wound over the cold end of the secondary L4 and inter-wound on all other bands. Oscillator coils L5 and L6 require a little juggling with the spacing between them. If it is too loose oscillator stops, if too tight the oscillator will super-regenerate and cause birdies across the band. A lot will depend on the oscillator valve, both to its type and age. Close coupling between the aerial and r.f. coils may bring thoughts of lack of selectivity but selectivity is determined mainly in the i.f. stages and causes no worry.

It will be noted from the coil table there is no band spread on the 3.5 Mc. coils; both variable condensers are placed across the whole coils.

**POWER SUPPLY** This is external to the receiver proper and consists of a standard 385-0-385 volts 100 mill. transformer, 80 rectifier and a two section filter. If the receiver is to be used exclusively with a loud speaker, a single section filter may be enough, but for quiet listening with headphones the two section filter is essential.

The power supply was made separate mainly with the idea of removing a prolific source of heat, and secondly because there was not enough room on the chassis.

## MECHANICAL DETAILS

In order to make a good job that would not fall apart, and at the same time be reasonably easy to work, the 17" x 10 1/2" x 3" chassis was made of 1/2" aluminium. A rigid assembly is essential for the chassis if signals are going to stay on the nose. There is of course no reason why a modern steel chassis could not be used with equal results.

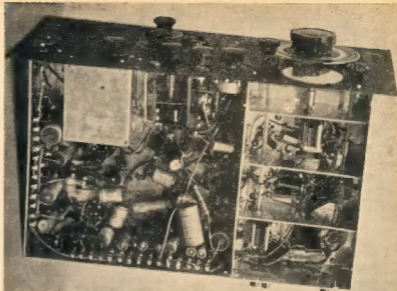
Mounted on the right hand corner of the chassis (as shown in the top view of the receiver) is the shielded compartment containing the whole of the first three stages of the receiver, namely the r.f., frequency changer, and i.f. oscillator. This is made of 18 gauge aluminium and divided into three compartments by baffle plates, and finished off by a well fitting lid. This shield measures 8 1/2" long, 6" wide and 5" high; each compartment inside is 2 1/2" wide.

As shown in the under chassis view, each of these stages is shielded by cross baffles which also serve as mounts for the band-set condensers. Under-shielding is finished off by a cover plate which fits over the whole of the under shielding not shown in the photographs. Also in the under-chassis view is the bottom shield of the b.f.o. and second oscillator section, this is the almost square aluminium box visible about half-way up the panel. The panel by the way is a Trimax steel job 18" x 10 1/2" finished in black crackle, very rigid but hard on the home builder's tools.

**LAYOUT** The receiver controls as shown on the panel are bottom row (right to left): r.f. band-set condenser, oscillator band-set with dial and pointer, aerial band-set, r.f. gain control, audio gain control, speaker jack, noise silencer threshold adjustment, and phone jack. Above silencer control is the a.v.c. on/off switch and at extreme left two s.p.s.t. switches, b.f.o. on/off on top, and B+ on/off lower. The main tuning dial directly over the oscillator band-set condenser is an "Aegis." Although any smooth-running dial will be satisfactory, with the amount of band spread and tuning rate given in the receiver, about a 10-1 vernier drive ratio is ample; too high a ratio is not necessary. To the left of the "Aegis" dial is the EM1 magic eye and to the left of it above and below the selectivity control C25 and the phasing condenser P.C.

Reverting to the top chassis view, in the top right hand corner is the r.f. stage, followed by the converter stage (5SA7) and the h.f. oscillator (6J5). Along the back of the chassis the two square shield cans are the two 1800 Kc. i.f. transformers with the 6K7 i.f. amplifier between them. Following are the 6L7 second converter and the 6J7 noise amplifier, immediately in front of the 6J7 is the noise transformer, followed by the second oscillator shielded coil and the b.f.o. coil; each with their respective tubes to the right.

Immediately to the right of the noise transformer are two square i.f. transformers, these are the input and output



Underneath view of chassis showing R.F. sections and shielding also shield of B.F.O. at the left.

transformers for the crystal filter which is situated just in front of the two transformers, the only part visible in the photograph is the selectivity control condenser C25. Following the filter output transformer is the first amplifying valve (a 6K7 or 6U7G), a 465 Kc. transformer, the second amplifying tube and third detector (a 6B7S or 6C8G) with the last i.f. transformer on its left. The 6V6G output tube is immediately behind the third detector, and the EM1 mounting is shown just to the left of the 6V6G. The fixed condenser, visible between the EM1 and the i.f. transformer shield, is the 0.05 uF. between EM1 grid and earth. The 6H6 noise rectifier is the small metal tube between the crystal input transformer and the second oscillator coil can.

**GENERAL DETAILS** As a receiver of this type is unlikely to be built by a beginner, no detailed description of the wiring will be given, the general layout is well shown in the photographs and can be followed easily. For the sake of later servicing most resistors and by-pass condensers of the i.f. stages and noise silencer are mounted on resistor strips running along the back and one side of the chassis. These can be wired up before they are actually installed and it is only a matter of a short connection between the strips and their associated valve sockets when they are actually bolted in. In this receiver when first completed, all except one or two condensers were on the strips. Changes made later account for the surplus components shown in the underneath view.

The crystal used is one working with an air gap, and care should be taken to mount it in a horizontal position, so that

the gap will remain as a uniform gap. When first installed the one used was mounted vertically and caused many hard things to be said about the poor results of crystal filters, until it suddenly dawned on me that the crystal was supposed to work with an air gap that should stay put and not have the crystal moving round between the plates. So the mounting was quickly swung through 90° and all our troubles were over. However don't forget that sometimes the crystal gets dirty, just like the ones do in the transmitter and it may need a clean up now and again, especially if it is an open holder.

The coils in the original receiver are all wound on valve bases as they were the only materials available at the time, to avoid mistakes when plugging in, the oscillator coils are wound on 5-pin bases, and the r.f. and converter on 8-pin bases. However it would be better to use the modern Trolitol 11" formers for more than one reason. Firstly they are much better electrically, secondly the thermal co-efficient is much less than bakelite, thirdly they look better, and fourthly (this one is quite important) there is less risk of damaging the windings with continuous band changing. Six-pin sockets grip quite firmly and it is easy enough to pull turns off when changing bands in a hurry. Different bands can be colour-coded, with the oscillator coils given a distinctive marking in addition.

**ADJUSTMENT** Lining up of the receiver is best carried out in stages as follows:—

- 1—Lower frequency i.f. stages.
- 2—High frequency i.f. stages.
- 3—Front end of receiver.
- 4—Noise silencer and crystal filter.

The lower frequency i.f., if used with a crystal filter, is best adjusted by wiring the crystal into a simple triode oscillator, the frequency of the crystal as an oscillator will be slightly different from its frequency as a resonator but will be accurate enough for the first line up; 45 volts or less on the plate will give ample output. For the 1600 Kc. stages, if no signal generator is on hand, an easy way out is to use a b.c. oscillator coil with a standard single gang condenser; this should go to round about 2000 Kc. and cover this section nicely.

Before lining up short out the crystal filter and turn the noise silencer control to maximum bias thus cutting out their two functions and leaving the set as a straight super without trimmings. Now proceed to line up the 1st i.f. stages starting from the third detector stage and working forward to the grid circuit of the 6L7 second converter. It should be necessary to decrease the coupling between the crystal oscillator and the various stages as more stages are lined up. When all 465 Kc. stages are peaked as shown on the magic eye, set your signal generator (if you have one) or home-made oscillator on 1600 Kc. (you can check this frequency on most b.c. sets) and loosely couple the output into the grid of the second mixer. Now vary the condenser across the second oscillator tank starting from minimum until output is indicated in the EMI, then proceed to peak both 1600 Kc. i.f. transformers as above.

Now line the front end up either on a steady signal or one from a monitor or signal generator. When the receiver is working to your satisfaction at this point, line up the noise silencer, by pulling out the h.f. oscillator tube and feeding a 1600 Kc. signal into the first 1600 Kc. stage, via the grid circuit of the 6SA7, of sufficient strength to close the EMI. Turn the silencer full on, i.e. to the earthed end of the variable resistor R43 and peak the noise transformer by the MINIMUM output shown on the EMI; back off the silencer control until the signal comes up in the magic eye and re-peak the transformer. Continue this process until the transformer is right on the nose. In normal operation the silencer should operate with about an eighth of the silencer control cut in, if much more than this is used the gain ahead of the silencer is too great and should be cut down by increasing the bias on the 1600 Kc. amplifier. Too much gain here will cause blocking of the silencer and second converter on strong signals.

With the silencer operation OK turn the threshold control to the off position and adjust the crystal filter as follows: Plug the crystal filter back into position, and with the crystal still switched out, a clean signal is tuned in and peaked; and then the b.f.o. switched on and adjusted for the desired pitch of note. Tune the receiver through zero beat to approximately the same pitch on the other side, now switch the crystal in by

turning the phasing condenser P.C. from zero, and adjust the phasing condenser until the signal is practically eliminated. The filter is now adjusted for single-signal reception, and with the exception of very strong or modulated signals it will be found that signals are only received on one side of zero beat. For c.w. work the crystal should be left in at all times, as in a crowded band it is easy to lose a weak signal if the filter is set after the signal has been tuned in. Phone work the phasing condenser is set at the point of maximum "hiss" noise.

In conclusion the 6L7 is replaceable by 6LTG and according to A.W.A. if they are unobtainable, a 6J8G can be substituted for the 6L7G without any change of socket connections; the connection to pin No. 6 being ignored and the valve treated as a 6L7G. The reason of course is that the 6J8G is really a 6L7G plus a triode oscillator. The 6SA7 may or may not need neutralising. In this receiver it was not necessary and it works as well on 28 Mc. as on 7 Mc. If required a very small condenser of 1 or 2 pF. between the control grid and the oscillator grid will do the trick.

The control knob to the left of the noise silencer control is not used at present, originally it varied the amount of b.f.o. voltage to the 6BTs but as this idea proved an unnecessary refinement it was cut out. It could be used for a variable condenser to give a variable beat note. The hole between the magic eye and the "Aegis" dial is the remains of another experiment now defunct.



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## CATHODE COUPLED OSCILLATOR

By Dr. A. F. TAYLOR\*, VK3AT

In my case, use is made of an EF50 in the buffer stage, with an r.f. choke of 2.5 mH. in its plate lead, and this is capacity coupled to a 6V6, also operating in class A, with a coil of 70 turns, 34 s.w.g. enamel, on a  $\frac{1}{2}$ " polystyrene form, shielded by an old i.f. transformer can. The tuning coil L1 consists of 15 turns of 22 s.w.g. enamel on a  $\frac{1}{2}$ " polystyrene form, with an iron dust core fixed in the axis of the coil.

The condensers coupling the tuning unit to the valves in the oscillator are 3-30 pF. air trimmers. These are just the thing as their capacity can be readily adjusted to give greatest stability.

This circuit is very stable on the 3.5 and 7 Mc. bands, but does not oscillate readily in the regions higher than 10 Mc.

the coupling between the tuned circuit and oscillator valves is very small, 2 to 5 pF. In other words variations in effective inter-electrode capacities of the valves due to variations in plate voltage and tube heating have negligible effect on the frequency determining circuit.

A voltage regulator in the v.f.o. power supply is therefore not as essential as in most other types of oscillators.

The coupling between cathode of the cathode-coupled oscillator and the grid of the following buffer amplifier is a variable 3-30 pF. air trimmer. This is used at the smallest possible value to obtain reasonable output, to further help the electrical stability of the v.f.o. Also taking the output from the cathode helps this stability. Output may be

## QUESTIONS &amp; ANSWERS

Following a suggestion by VK2ALR and others recently, a Questions and Answers column makes its debut. It is intended to act as a clearing house for your queries and also your knowledge and experience, and you are herewith invited to use its services.

If you have a question of a technical nature send it in to G. & A. "Amateur Radio," Box 2611W, G.P.O., Melbourne and if suitable it will be published in this column. If you can answer any of the published questions you are invited to send same to the above address. All such replies will be forwarded to the questioner (if he has sent a stamped addressed envelope of suitable dimensions) and also a summary printed.

We reserve the right to reject any question as unsuitable but apart from this, this column's operation is up to YOU. So let's have your queries. To start the ball rolling, here are a couple of things we would like to know.

Q 1—What is the velocity factor of nylax twin power flex?

Q 2—Why are filter chokes put in the high tension lead where the windings have to be well insulated from the core when it appears that they would work equally well in the return lead at approximately earth potential?

## REVIEW.

## MICRO-WAVE TECHNIQUE

R.S.G.B. Publication

This little booklet is a **must** for every Amateur's bookshelf. For a general guide to micro-wave equipment from the Amateur viewpoint it has no equal, both for the u.h.f. man and even more for those who would like to know just what goes on up there.

A description is given of the operation of each of the components which are in present use; cavity resonators, wave guides, aerials and radiators, crystal mixers and detectors, and the various types of tubes; klystrons, travelling wave tubes, lighthouse triodes, magnetrons, etc. No mathematics, no formulae, but after perusing Micro-Wave Technique one has a very good idea as to which frequency these gadgets work at, their power, and their usefulness to the Amateur.

No specific circuits for Amateur transmitters or receivers are given, purposely, since at present all work has to be done with equipment which is round and about. However a chapter describes the sort of set-ups which would be suitable and this should give some ideas to those who are interested.

Definitely great value for its small cost.

ode resistor used is 2,000 ohms, but again is not critical.

The v.f.o. should have its own power supply and 100 to 200 volts plate supply is needed. All three stages of the unit draw a total of 35 Ma., at an operating potential of 120 volts.

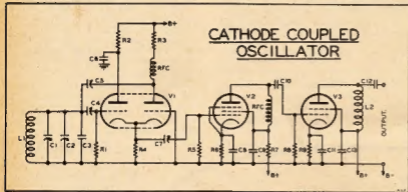


Fig. 1

R.F.C.—2.5 mH.

R1—100,000 ohms, 1 watt

R2, R3, R4—2,000 ohms, 1 watt

R5, R7—5,000 ohms, 1 watt

R6—150 ohms, 3 watts, wire wound

R8—330 ohms, 3 watts, wire wound

V1—6N7

V2—EF50

V3—6V6

taken from the plate of the second triode where slightly more i.f. voltage is available, although it may affect the frequency more.

The v.f.o. at the writer's station operates on 4.7 Mc. feeding a two stage transmitter, the first stage being used as a tripler, and the second as a straight p.a. for operation on 14 Mc.

Results have been good from the point of view of tone and stability of the oscillator, and as with other types of oscillators, mechanical stability is essential.

The values of plate dropping resistors are not critical and may be any value between 500 to 10,000 ohms or more, and need not even be equal. The cath-

This circuit is similar to the Franklin oscillator in some respects. It is a two terminal negative resistance type using two triodes, or a twin triode valve. One valve acts as a cathode follower amplifier and the other as a phase inverter.

The output is taken from the common cathode connection of the triodes. This circuit is not original and was shown to me first by VK3GU, who has tried it out, and it has some advantages over oscillators using single valves.

The dynamic stability is good, there is very little frequency drift during the warming up period after switching on, and variations in plate supply voltage of moderate amount do not affect the oscillator frequency. This is because

\*112 Maude Street, Shepparton, Victoria.

# A KILOWATT FOR YOU!

E. A. CHARLES, \*VK5YQ.

Yes sir, one thousand little watts all together, and just where you want 'em! Nothing new—you've read it all before, but did you think about it?

Recall how you've marvelled at the way a certain few W stations push your S meter over when the band is only fair? They run 1 kilowatt though, you say, and have a three element beam. Yes, but if they were operating under your transmitting conditions, they would need an input of 20 kilowatts to shoot over the same signal! And do you ever think of the thousands of W stations you've never heard, and are not likely to ever hear?

This way you will comply with para 91 of our Handbook and save many a faithful 807 from an untimely demise, not to mention the coal shortage.

How?—simply by using and concentrating a few of the many db's. that are going to waste. When you want to read in bed you don't try it by moonlight. And when you ring the YL over trunk lines, you don't sing or recite your 88s—you want her to hear you, and hear her say she will QSL.

So, firstly, your modulation. Pro-

\*193 Young Street, Unley, South Aus.

gramme compression of 3 db. is common broadcast practice—it is as effective as doubling the stations power. There is a circuit in the 1947 A.R.R.L. Handbook that given 25 db. of clipping of speech peaks. It is generally accepted that the average level of modulation on speech is 30% when the peaks reach the 100% modulation level (What yours reach is often discussed.) In round figures, the difference in input level to increase from 30% to 100% modulation, is 4 db. Fifty per cent. to ninety per cent. is a rise of another 5 db. in input level, a further db. bringing up 100% modulation.

If you can accomplish 7 db. of compression, you have a power gain of five times. Your 100 watts are equal to an input of 500 watts without compression.

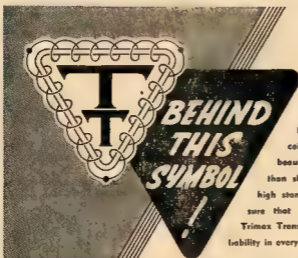
Now, let's work on it. The maximum possible gain from a two element beam is 5.7 db. (radiator and parasitic director, tenth-wave spacing—"QST", April 1947). Up to 7 db. with a three element, to 9.7 db. from a wide-spaced four element beam. However, let's assume you get, in practice, a 5 db gain over an ordinary half-wave antenna. That is a power gain of three—your 500 watts have now become equal to an input of

1,500 watts. Settle for two-thirds efficiency—you have 1 kilowatt in anyone's language!

Well, what are you wasting time for? The cost—for compression—another tube or two and a few bits. The beam yes, a few quid, depending on how far you have deteriorated in that services-acquired habit, "scrounging."

However, a certain amount of time and hard work are required, to make the compression/clipping behave, and to properly adjust the beam. The first is very necessary, the latter very desirable. Neither are greatly involved or complicated.

There are some who will say it takes the fun out of the game—like shooting rabbits by using telescopic sights. But maybe you, too, are fond of roast rabbit. Don't expect miracles, though—you'll learn a lot by listening. And don't be surprised when you see the local QRM at work next day, and he tells you he collected a couple of new countries the night before (with his full wave zepp and 20 thin watts). You'll notice he looks a little haggard though, and has difficulty in keeping his eyes open. Of course anything goes with wide open conditions, if you wait for the competition to go to bed and the band is really wide open. After all 12 db. is but two S points!!!



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## QRP OPERATION

BY R. J. WHYTE\*, VK2AHM

For the benefit of those interested, the writer outlines hereunder equipment used during recent successful tests on 28 Mc. Power input to the final stage was varied from 4 watts to 0.2 milliwatts.

Transmitter—6K7GT o.s.o./c.o., 6K7 GT doubler, HY60 final, plate modulated by battery powered 1J6G operating in Class B, percentage of modulation being somewhat restricted by method of application (normal method of modulating both plate and screen could be applied to advantage—Ed.). For QRP operation the gain control is simply turned back to the proper setting for correct modulation level.

Aerial System consists of series of 14 Mc. vee beams arranged to provide low angle radiation in selected direction. Seven wires, 272 feet long, radiate from central pole 45 feet high, to the perimeter poles 12 to 15 feet high. Wires are of 12/14 s.w.g. galvanised wire and spacing is approximately 51.5 degrees. All feeders enter the shack as a cage and are spaced 4" apart. Required two wires being selected by flexible leads. Feeders are tuned, using either series or parallel arrangement and are about fifty feet long. The system as a whole works very well on both 28 and 14 Mc.

\*Willow Point Station, via Wentworth.

## SHORT CIRCUITS

SIMPLE BUT EFFECTIVE KEY  
CLICK FILTER

After listening to the large number of stations radiating key clicks these days, the simple but effective filter which I use may be of some help to those seeking a remedy.

Secret of the system is the use of a wet electrolytic condenser. A dry type has been tried with negative results.

I have keyed final amplifier centre tap, buffer cathode, and crystal oscillator cathode with the same results.

The family h.c.l. set aerial is connected at one end to the same mast as the transmitting aerial, and no trace of clicks are evident in that receiver.

The 8 uF. electrolytic is connected directly across the key contacts with the positive side to cathode of the keyed tube, and the audio chokes placed in each lead. The leads from the cathode to key are in shielded wire and earthed.

The chokes do not appear critical

Power Supply.—6 volt vibrator supply providing 25 Ma. at 160 volts was used for normal operation. Vibrator unit was provided with taps for QRP operation.

Results achieved have been most gratifying; but in many cases do not agree with VK3CO's "Story of the Decibel" (details of contacts submitted by the author reveal that unknown and unpredictable factors involved precluded accurate comparison—Ed.).

as the ones in use at present are the audio chokes found in old fashioned receivers.

If you connect the condenser back to front or use a "sick" condenser, current will appear as though the key was closed.—VK2QL.

## MOTOR FOR ROTARY BEAMS

VK5SP has found a use for the 24 volt motor generators which are part and parcel of a lot of disposal equipment, particularly i.f.f. gear. The field windings are disconnected from the 24 volt driving armature and connected in series with the 240 volt winding. With these connections one has a motor which with suitable gearing, will turn a beam using either 240 volts a.c. or even 300 volts d.c. from the normal power supply. Current is about 40 Ma. using d.c.

## D.I.G.

VK3QO, our scribe for Fifty and Up, having the doubtful advantage of having an illegal broadcast transmitter in close proximity, came home to find press photographers busily engaged snapping his poor old 50 Mc. folded dipole from various angles, under the impression that they were getting a real pukka scoop photo. He had to disillusion them, of course. The same night, 12 midnight to be exact, more pressman, more photographers, more annoyance. What he would like to know is who sent them to VK3QO. Anyhow fellows if there are no more 50 Mc. notes, you'll know VK3QO is in a quiet location, NOT working DX!

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## FIFTY AND UP

Compiled by VK3QO, to whom all contributions can be sent

date unspecified (but about beginning of May  
about 6 p.m. our time.

We are objectors (quite rightly) to continuing reminders about harmonic radiation from Ham Stations. Why is it then that VHQ can continue to run their rig in such a poor manner that numerous spots occur in the 56 Mc band? It would not be so bad if one could identify it, but as it is one has to wait hours before any call sign is given. Why can't they give their call sign any evening of an hour?

**VK3 FIELD DAY**  
The 60 Mc Field Day on 5/5/48 was rather restricted this time; only 3CZ, 3U1, 3D1 and 3VL were out, though 3RE took his receiver to Hallstatt, no room for his transmitter in ear. 314/3VL were at Arthur's Seat. Rex and Gwendolyn used their usual portable with 3 watts to a 5V antenna. They worked all portable stations and 3R, 3P2, 3SD, 3AB, 3ABA, and 3GE since portable was not used. Some very interesting aircraft tests using their beam at various heights and appears that with a very low aerial signals disappear in some directions only.

SABRO used his new mobile rig consisting of v.f.o., doubler into doubler into 832 doubler into p.p.s. 907s. Modulation was f.m. secured by local modulating the v.f.o. Power from Type 3 Mark II power pack. Receiver was converter into two IF stages. The antenna was a 6' whip picked up 150 ft. SWL, SABA and SITK were from the top of the David our Pretty Sally Hill. Rig was vertical rack and panel and looked nice; aerial was half wave (350 feet), wind SAPP, worked from Mt. Mayo (350 feet), near Double, where they heard Mo. bourn stations up to 50. Their greatest surprise was to hear SWL, SABA, SITK and SABRO. A plenty of mountains in the stretch - 150 miles between them. SWL, SABA, SITK, SABRO, SPO and SITK were also worked. No hope to hand on rig now.

**VK2FIELD DAY A WASH OUT**  
The "Drum Field Day" set down for the 31<sup>st</sup> and 2nd of May was washed out due to heavy rain. The 1000 WAG members who were expected to participate in the 4XG operated from Maleny: 4RT from Tamborine Mountain and 4DQ from Mt Kinross, Toowoomba with 4LS in Gympie and the Brisbane group operating from Mt Tamborine. The 4XG group from Maleny, 4DALberg crew although 4XG and 4ZU had their beam aimed north quite a bit. Signals between 4RT and 4ZU-4XG on 144 Mc (Tamborine to Maleny) were heard but not clear whether the distance (60 miles) constitutes a record. Signals between 4XG-4ZU Toowoomba-Maleny, were 90 plus on 5 Mc. 4DQ was pleased with the performance of his element 4RT, a duplicate of the one in use by 4ZU. 50 or 60 follow-up stations were contacted on either 50 or 144 Mc. 4BR, 4RL, 4AW, 4KB, 4RT, and 4TY. Signals on 44 Mc were heard in Gympie 40 miles west of Maleny and 4XG from Toowoomba. 4XG and 4ZU. Contacts were made by 4TY and 4HR from their home QTH but although the Maleny mms were heard, 4CH could not be heard. The 4XG group from Toowoomba was disappointed was surprising that more stations did not participate.

## SGF GOES MOBILE

From 60R via 27S we learn that 60F has installed a mobile rig in his wagon, and on the 5/15/48 made a trip to Gawler, about 25 miles north of Adelaide. He also contacted the General on the trip. They QSO'd him right into Gawler, but when he (50P) arrived at 5A's place (at Gawler), Adelaide signals dropped out, evidently because of interference buildings. Although 60F says he could still hear 60G in fact 3RT, which has a vertical antenna, got him 87. 60F was crystal controlled, about 25 to 30 watts input to 897 or phone, 60E converted to car radio for receiver and transmitter. The latter had a 100 watt tube bore using horizontal antennas but they seemed to get through OK. He also made trips to the Adelaide hills and signals were 50 plus on a standard SGL. 50B, 58D, 58U, 50W, 3RT and JD.

**ACTIVITY IN VKS**  
 4PC and 6GB have both been putting good signals into Hambury, apparently for quite some time but it was only recently that they have actually been heard. 6QS, with friend Rellie Stringham took the latter's converter and receiver to the hill behind the High School, and heard the above call signs at 26-6, a distance of 97 miles. Same week 6ELW took portable to Mandurah and worked 6GS at Harvey and 4PC and 6GB in Perth, but signals not too good due mainly to very heavy QSB.  
 May let saw the opening of 144 Mr hand with

five stations—GAB, GDF, EBU, GKW, GLW and all there dead on time. An enjoyable night was spent by all (especially GLW), whilst the other four were using SORAFs from their home QTHs. This promises to be a very popular band and we hope to give news of some further contacts next month. May 8th EBU's signals were heard by GAB at Birmingham, a distance of 15 miles. This is the record in UK up to the time of writing.

144 Mc D QUEST

From Bill Hartley

Proceedings in the 144 Mc spectrum now in use are very interesting as someone this band seems to be a very clean one, that is devoid of harmonics and also to date aircraft clutter effects. Working conditions seem to be superior to the old 168 Mc band in that signals are stronger than of yore, probably due to the change over to horizontal polarization. Some signals are weaker during daylight operation and until time and experiment prove the answer it can only be conjectured that location, time and weather conditions play their part.

There is no doubt that a horizontal array certainly provides a greater signal intensity and would be the best signal medium for use on field days and at polo grounds to point out the location of the horse. The working of local contacts can be well provided for by vertical polarization. The happy medium can be found by using a horizontal array of antennae. If used, the vertical as a secondary or tertiary antenna, having a quick look around the band, and the horizontal to providing a strong directional signal where the antenna is pointed. This is the same as the antenna compass and, at the same time, carrying out a clean sweep of the band at each compass setting is found to be slow and laborious. As things improve, the antenna compass will be used to point out the location outside the main lobe of the beam. Cross polarization is also bound to occur, and can be overcome. The antenna is found, by changing over to the second antenna.

Activity for the month showed that the two 160 guard are showing marching this year, the two stewards in 343 in 343M and 32M are now moving the pace for their second hundred contacts; we are running in 343 in 343M and 32M in the modified 303533 plus. The two 343 in 343M and 32M are now moving the pace for their second hundred contacts; we are running in 343 in 343M and 32M in the modified 303533 plus. The two 343 in 343M and 32M are now moving the pace for their second hundred contacts; we are running in 343 in 343M and 32M in the modified 303533 plus.

BOI at Foster now on 144.2 Mc., working on Sundays from MI Fortigue, will be a valuable link on field day operations. Gear in use is a SCR8000, 600 watt, 100 ft. antenna, 100 ft. boom, 10' spaced array or the six element wide spaced stacked beam. STO is another newcomer to the v.h.f. and for the present is using a modified B06t4 at 10 watts and a BOE refer to a simple horizontal dipole. The antenna is made by cutting wire using same rig as that on 106 Mc. Antenna is a horizontal, three element beam and s.w. resonator They have had a few QSO's and find the beam busy. They are still giving me very acceptable assistance in erecting their beam which is on top of their 50 Mc. beam 86 feet high.

Things are booming in VES at present according to SVW, where the following are active: SVW, 1BZ, 2WJ, 2ACL, 2AHG, 2DP, 3FD, 3LE, 3APF, 3NO, 3NE, 3NO, 3UV, 3ABR, 3OC, 2AT and 2RI. SVW is on the job with 15 watts input to a 80522 transmitter in to a four element horizontal beam and receives on a AB3U. 2LE up at Wentworth Falls in the Blue Mountains is understood to work a 80 mhz hop to 2ADT at Cernock. SVW's beam must be f.h. as his signals beat their way into 3OC's (of Wyong) indoor antenna. EKJ still interested in radio-controlled model aircraft.

144 Mc activity in YK4 started off with a great deal of activity, the only casualty being poor old 160 which was left behind by the time YK4 arrived. However with the mid-winter peak in sporadic E approaching we may enjoy a little "Intimate Distance" between the two stations as they both work for transmitters and quite a few for receivers also. 4 and 8 element beams are popular as unimanned and portable antennas for the more extreme groups. The 471' trail cut out the 16 element beam group in the Handbook and as the book says it yielded a "performance" which is truly outstanding. "ATV" must have been used in some way or other very hand quick—something we never had on "GY".

The fifth district is slow on making the new bands available. I hope the 1983 edition of the GJD has a most interesting transmitter with a SAC<sup>+</sup>, C<sup>+</sup>, alpha harmonic output, tripling with a 200 watt driver, a 880; both RQ and ARV have

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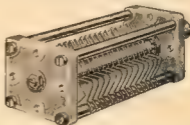
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## FEDERAL FREQUENCY ALLOCATIONS

As mentioned in the Editorial in this issue, certain new frequency allocations have been made as a result of Federal Executive's negotiations with the P.M.G. Department. Listed below are the bands that have been allocated as from the 1st June, 1948.

8.5 to 3.8 Mc.—A1, A8  
7 to 7.5 Mc.—A2, A5  
14.0 to 14.4 Mc.—A1, A2, A3, A5, A8  
25.95 to 27.98 Mc.—A1, A2, A5, A8  
28.0 to 30.0 Mc.—A1, A2, A5, A8  
30.1 to 34.0 Mc.—A1, A2, A3, A5, A8, A9, A10  
34.1 to 34.8 Mc.—A1, A2, A3, A5, A8, A9, A10  
34.9 to 35.6 Mc.—A1, A2, A3, A5, A8, A9, A10  
35.7 to 36.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
36.6 to 37.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
37.6 to 38.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
38.6 to 39.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
39.6 to 40.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
40.6 to 41.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
41.6 to 42.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
42.6 to 43.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
43.6 to 44.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
44.6 to 45.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
45.6 to 46.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
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98.6 to 99.5 Mc.—A1, A2, A3, A5, A8, A9, A10  
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326.6 to 327.5 Mc.—A1, A2, A3, A5,

keeping of schedules generally. It is thought that this improvement could be achieved by having a standby operator for each Divisional Traffic Manager. Interference has been another source of worry, but if some plan is evolved for schedule keeping this difficulty may be overcome.

**"Amateur Radio"**  
The Federal Executive has maintained contact with the Editor of the Magazine during the year and very good co-operation has been achieved. The campaign for the technical development of the Institute has already been done, and this will be done through "Amateur Radio".

**Finance**  
The Treasurer's report is appended, and it is becoming increasingly obvious that the present expenditure is not sufficient to meet Federal expenditure. This will form the subject of some discussion during this Convention.

**General**  
One of the points of some concern during the year has been the slowdown with which we have received notification of the resolutions of the last Convention. It was with this idea in mind that we will request each Delegate to deposit with the Secretary his instructions for voting on the various items, so that in future the minutes of the Convention will show the Division concerned which way they voted. A progressive year of endeavour is expected both with the Divisions and the P.M.G.'s Department.

#### CONVENTION MATTERS

It was resolved at the 1948 Annual Federal Convention that anyone requiring a copy of the Federal Constitution, should make application through his Divisional Secretary for same.

Another matter of perhaps greater importance, is that of the reduction of the number of commercial advertising on our bands. It behooves every amateur hearing and able to identify any part or distinguishable characteristics of such transmissions to report the same to his Divisional Secretary who will forward this information to Federal Executive for collation and submission to the P.M.G.'s Department. Only by such concerted and individual effort can we hope to keep our channels clear of these commercials. Those who let have that dope, fellows.

A matter of some concern and universal importance is interference. In some cases unwittingly, being caused by Amateurs to the Official Broadcasts of the Division and also to the Federal Traffic Net. These reports are for your benefit—where you can be clear. In the near future a revised list of times and frequencies will be published and will help us to help you.

#### DX C.C. LISTING

Applicants for the DX C.C. should make sure that the cards submitted show all details of communication of the QSO. By so doing they will save themselves possible disappointment. It is also recommended that one or two cards over the hundred should be submitted. Who is going to be the first to make phone DX C.C.!

PHONE 3H0		
C.W.		
VK3CN	108 (3)	
VK3EO	103 (7)	
VK3EN	102 (10)	
OPEN		
VK3RZ	122 (5)	
VK3DI	31 (2)	
VK3HG	112 (4)	
VK3X	156 (13)	
VK3W	106 (8)	
VK3HR	101 (9)	
VK3CV	100 (8)	

Figures in parentheses indicate membership number to DX C.C.

Please note that the only official changes to the List as printed in February 1947: QST are:

Isle of Man	GD
Lebanon Republic	AB
Pakistan	AP
San Marino	

The following changes have also been made to previous of various countries (subject to further change when the Atlantic City determinations take effect) —

Andorra & Nicolai Is.	VUS
Austria	MD0, UG
Banladesh	ZS4
Czechoslovakia	EC
Cyprus	MD, Z04
Dominican Islands	SV2
Eritrea	MD3, 3112
Egypt (Suez Canal Zone) St.	MD5
Iran	VI, MD0
Korea	JL
Luxembourg	MD, V14
Maldives Islands	MC1, MD
Malta	VSE
Marshall Islands	RX6
Sierra Leone	MD4
Sri Lanka	AR1

**CONTEST NEWS**  
Two further logs for the last Australian DX Contest have been received.  
HRCW .. 889 Points c.w.  
HT44 .. 84 Points c.w.

The first post-war Tri-State Contest is over and although not a great success overall, there that did had a good time. This contest illustrated the need for a universal type of exchange of awards. Some confusion arose due to the fact that the Tri-State had a contest running on 2.5 Mc and were using our DX Contest type of aerial exchange. The availability of success of these Contests depends on the logs that are sent in—please send in your log even if you only had a few contacts to assist in the checking also!

#### FEDERAL IONOSPHERIC AND TROPOSPHERIC SERVICE

A Federal Ionospheric and Tropospheric Subcommittee has been formed and consists of Messrs. Oliver Moriarty, Doug Anderson, VK3ZW, and Neil VK3YX. This committee has undertaken

## Australia's Largest Stock

# All Radio Components

Chokes  
Coils  
Condensers  
Dials  
Intermediate Transformers  
Morse Equipment  
Potentiometers  
etc., etc.  
Resistors  
Soldering Irons  
Speakers  
Test Equipment  
Valves  
Pick-Ups  
Power Transformers  
etc., etc.

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#### WIRELESS INSTITUTE OF AUSTRALIA—FEDERAL EXECUTIVE

#### Statement of Receipts and Payments for the Year ended 31st March, 1948

RECEIPTS		
Balance in Bank 1st April, 1947 ..	238 0 8	
Per Capita contributions from Divisions		
Queensland .. ..	31 0 0	
New South Wales .. ..	37 2 0	
Victoria .. ..	79 10 0	
South Australia .. ..	28 11 8	
Western Australia .. ..	6 10 0	
Tasmania .. ..	8 0 0	
	103 11 3	
Sale of Lapel Badges —		
New South Wales .. ..	16 18 0	
Victoria .. ..	46 13 0	
South Australia .. ..	20 14 9	
Western Australia .. ..	8 18 0	
Tasmania .. ..	5 5 9	
	84 11 3	
Certificates:—		
Queensland .. ..	110 0 0	
New South Wales .. ..	25 0 0	
Victoria .. ..	25 0 0	
Tasmania .. ..	0 0 0	
	65 0 0	
Contd. Account—Victorian Division ..	15 0	
	1346 18 1	

PAYMENTS		
Convention Expenses—		
Minutes .. ..	£10 10 0	
Expenses .. ..	18 8	
Victorian W.A. Division .. ..		
V Expenses .. ..	20 0 0	
	£31 8 8	
Lapel Badges .. ..	101 2 9	
Certificate .. ..		
Competition Prize .. ..	£2 1 0	
Certificate Design .. ..	8 8 0	
Printing .. ..	100 15 0	
	111 3 0	
1947 Contest —		
Printing .. ..	£1 18 6	
Postage .. ..	2 3 0	
	4 18 6	
Typewriter overhaul .. ..	6 10 0	
Renewal Code Address .. ..	£2 2 0	
Licence for Station .. ..		
VK3WIA .. ..	1 10 0	
	3 2 0	
QSL Bureau Expenses .. ..	7 0 0	
Printing and Stationery .. ..		
S.W.S. Consultation .. ..	£2 3 0	
General .. ..	4 18 9	
	7 18 9	
Petty Cash, Postage and Telegrams ..	11 17 1	
Miscellaneous Expenses .. ..		
Entertaining .. J. M. ..		
Dubby .. ..	£2 18 0	
Cheque Books .. ..	10 0	
	2 8 0	
Refund advance by Victorian Division on A/c. W.A. .. ..	50 0 0	
Contd. Account—Victorian Division ..	15 0	
	£89 1 5	
Balance—Cash in Bank, 31st March, 1948 .. ..	57 18 8	
	£46 18 1	

(Sgd.) P. EVANS Honorary Treasurer

I have examined the Cash Book, accounts and vouchers of the Federal Executive of the Wireless Institute of Australia for the year ended 31st March 1948, and have obtained all the information and explanations requested. In my opinion the within statements correctly set out the financial position of the Federal Executive as at 31st March, 1948, and the transactions for the year ended that date.  
(Sgd.) F. K. HESHAM, A.F.I.A., A.O.I.S.  
25th March, 1948. Honorary Auditor.

# TECHNICALLY in the know

**TO-DAY** more than ever before, it is essential to keep fully informed on electronic matters.

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**RADIOTRON TECHNICAL PUBLICATIONS INCLUDE:**

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- II.** Data Book—octavo size—150 sheets in loose leaf binder—comprehensive data on all Australian-made receiving types—new and revised sheets released periodically.

- III.** Valve Charts—quarto size—36 pages covering characteristics, classification tables, socket connections—special section on Australian-made types—comprehensive substitution directory.



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to publish a chart which will give synoptic predictions for all Australian States in addition to countries for each month. Weekly alterations will be sent via Federal Traffic Channels each Friday night in sufficient time for Divisional Stations during the Sunday morning broadcasts.

Dr. A. L. Green, head of the Ionospheric Prediction Service in Australia will provide the information and this Committee will be responsible for the dissemination.

AMATEUR CALL SIGN AMENDMENTS AS AT  
31 MAY 2018

A treat-on in Calif. Address, etc.

1 N2AJE-B L Mills, 97 Sawbury Rd., Rose Bay  
SAQJ-G A. Abrahams, 28 Manchester St., Doul-  
ton, Kent, Eng.  
21Q K R. Ycherar, 25 Badgery Ave., Home-  
bush  
2MU-W M. Altwegg, 126 Denison St., West  
Toronto  
2QA-G J. Russell, 110 Hogan St., Nyngun  
Ct. (in hou of YK359)--N C. Hainford, 91  
Durhamville Rd. Concord,  
Vt  
VAADAM-A W. White, 100 Main, Asenyl, Vt  
YAHW-W R. White, 99 Ballarat St., Hamlyn  
VIC  
YHJ-J J. Manning, Unwin St., Templestowe  
3HF (in hou of YR414)--L G. Reynolds, 8  
Baker Rd., Melbourne  
3UL-L E. Mahony, OTC Radio Station, Bal-  
arat Hl., Graydon  
21D-C C. Somerville, Gabriel Ave., East Malvern  
4K1MA-J G. Brown, 48 Lamb Pl., South Bunde-  
berg, Qld.  
4US-K M. Cameron, Kerry Rd., Archedfield  
YKOY (in hou of YK45) W. Watson, OTC  
Radio Station, P.O. Box 2, T.P.N.G.

New stars

YASQUA - W. W. Tushet, 11 Ellington Rd., Cre  
mont.

YATZ - T. H. S. At 17 Avery Bl., Inverne

YIMZ - Huntville District Avenue Radio Club (Ch)

YK - E. Koon, 608 N. Main St., Harrisburg

YKA - C. J. Vardy, 35 "Lancia" Plats, Wing  
warre St., Dubbo.

YKE - R. A. Brown, 1 "Brandy of" Mariner Rd.  
Towers Rd. Commercial Park

YKH - E. W. D. P. c, 25 Malpas Court, 2d New  
South Wales

YKI - F. W. B. 130, 130 Brisbane St., Woolongang

YKJ - Dr. J. Mac, 288 Brighams St., Dubbo

YKAPAM - G. C. Hillings, 9 Munro St., Armadale

YKBP - J. J. Foster, 46 Moun St., Geelong

YKQ - J. Z. P. c. c. "Eaven Down," Diggers

YKR - R. L. I. Marginary Ave., Preston

YKY - A. Styles, 40 Bradvale St., Muffin

YLV - W. H. Harrison, 10 Main View Rd  
N. Y. B. (Cortland)

3VT- R. C. F. Gaff, 138 Swallow St., Shepperton  
 3WCF- P. C. Carrig, 31 Phillip St., West End East  
 3WCF- J. C. Garros, 11 Aultree St., Geelong East,  
 Brisbane.  
 4CW- W. H. Park, 17a Howland St., Bondville.  
 6FA- A. Field & W. A. Aviation Section, Car  
 built Touraine.  
 6M- G. W. Mullins, M.V. Idle Houf, Smith  
 St. Deagon.  
 9J- J. T. Marton, Ozana St., Belmont.  
 9ND- M. M. Dwyer, Yarrabiri St., Coorparua.  
 9O- O. M. O'Brien, Hillier St., (P.O. Box 55),  
 Richmond Qld.  
 9RL- L. A. Stephens, Courtlands Hall, Gungahlin  
 WZ- W. W. Wells, Coastal Radio Station, Thirra-  
 dar Island.  
 CA- C. B. W. Astin, 34 Flahar St., Fullarton.  
 E- E. Johnson, 11 Clifton St., Maryland.  
 GGD- E. Fairford St., Unley.  
 GS- G. T. Matthews, c/o 3 ALG, Anster St.  
 P. Paganini.  
 KENO- N. C. Craigie, 1 McClees St., Wembley  
 Park, W.A.  
 KTH- K. Pearson, 3 Amy St., Burnie, Tas  
 7MI- G. A. Mothershead, Macquarie Island, Aus-  
 toria Expedition.  
 9K9H- W. Bruce Murray Harricks, Three Mile  
 Post Moorsby T.P.S.G.  
 Correction.—VALL was wrongly stated in the  
 call sign list as belonging to C. S. Schuler.

**FEDERAL QSL BUREAU**  
RAY JONES (K1ERL) MANAGER

Harry Paston (W20AA). 116 Colling Avenue, New Rochelle, N.Y., U.S.A., requests that any address which contacted him when he was W20AA/38 in 1946 and who did not receive a card for the contact should drop him a note to the above address and the card will be forthcoming by return mail.

Previously in Melbourne as a member of a sailing party from the Philippines, one of the pilots paid a return visit after an absence of several years. He was formerly a W6 but now took a hand in running KALIA along with other dams. Official duties at the absence of this man in Melbourne were taken over by his brother, now a dam. Further word from Jim McNeely (1 GA 18) is that the recent fire on the "Wampus" did not damage the radio equipment. However owing to the very tight nature of the vessel at terminal use other parts of it at the moment doubtful if it will be possible to activate the vessel for a further trial.

when prior to the restoration of licenses in Portugal our friend was active as IJS without any prefix.

The I.A.R.U. have given notice in March "QST" that the special endorsement for W.A.C. on 28 Mc. either phone or c.w. will be withdrawn as from 30th June, 1948. The I.A.R.U. feel that there is now no need for special encouragement for Hams to use the 28 Mc. band. In lieu however, a special endorsement for W.A.C. 36 Mc. has been instituted. Who will be the first VK applicant?

an interesting QSL in that of ZC1AL, the station of the Arab Legion, with QSL address stated as Post Office Meftah, Transjordan. The card supplies the following information, "Transjordan became an independent kingdom ruled by H.H.H. King Abdullah in 1945" and therefore ZC1 stations cannot be accepted for B.R.T.A. and W.R.E. Certificates. The Arab Legion is the National Army of Transjordan.

Following are some DX QTHs that have come to hand:

FESAB—John Duplat, Nourmes, New Caledonia.

EK1TF—Herb Plummer, Box 57, British P.O., Tanager.

MD7DA D. MacDonnell, Cyprus Sig Sqn., M.E.  
L.F. 9  
ETSAF—Harry Doll, Box 858, Addis Ababa,  
Ethiopia.

VASEY—Eddie Cary, R.A.F., Sharjah, Trucial  
Oman Arabia  
VJIAH—P C Eddi, Vila Sea Hebrides.  
VPTOR—G Evans, Box 02, St. Georges, Gren-  
ada B.W.I.

**NEW SOUTH WALES**  
NORTH COAST AND TABLELANDS

SUN moved to Dapto sent the rotary beam by train; the best landstay, this one is listening for yos. Hampden kept going by SNA, 24SF and 26H 24EY holding the fort at Tarnu works 7 and 14 Mc, and has a c.r.o. in action, runs 110 watts on p.p. 884, 24WQ and 24JO both active on 7 Mc. 24TH has new antenna with good results, SUN thinking of going to 98 Mc. and making some

2JK lost amongst the 14 Mr. DX, getting his share too, who said he couldn't work DX things that he told 2ZX back from VK6 and on again with two sets of photos to 7 Me. 2SH has now folded up and into He has been having money a fair amount while the XYI is away. 2PA enjoyed Ham hospitably whilst in Sydney recently, met about 20 Hams in all.

## NEWCASTLE

24BX has three elements going nearly to 28 Mc. 24BP was so impressed that 28 Mc. is next for him. 24Q of c.w. fame is an older, 10 years or 14, an 817 to follow 24AG about 1' out fractured section out of 7 Mc. rock, hence 1' ward of 11m on 28 Mc. 24E also with three elements in 28 Mc. and plenty of DX. 243E coming on 28 Mc. lower end of

HAMS WHO LOST THEIR LIVES DUE  
TO SERVICE

W24JH—O C Curly	H	M A F
W24JH—F East m	H	M A F
W24JV—C B Jerns	H	M A F
W24JV—W J Jerns	H	M A F
W24KE—W Abbott	H	M A F
W24KF—J W	H	M A F
W24KH—J Met and s	H	M A F
W24KH—W Harkins J Mann	H	M A F
W24KH—W J Mann	H	M A F
W24KH—M Orr	H	M A F
W24KH—L L Temp and s	H	M A F
W24KH—J L Colthrop	H	M A F
W24KH—F Vash	H	M A F
W24KH—W W Jones	H	M A F
W24KH—W J A Barnum	H	M A F
W24KH—E E Snod, m	H	M A F
W24KH—L E Snod, m	H	M A F
W24KH—S I Starr	H	M A F
W24KH—R Ash	H	M A F
W24KH—C Allen	H	M A F
W24KH—S James	H	M A F
W24KH—G Phillips	H	M A F
W24KH—A G Rapp	H	M A F
W24KH—F Giddard	H	M A F
W24KH—A Anderson	H	M A F
W24KH—P Williamson	H	M A F

We are indebted to VERAALX, VERHIZ, South Australian Divisional Council, and VKEAH for some corrections and alterations to the above list.

We wish to finalize the list of names above within the next month as the Perpetual Trophy for the Remembrance Day Contest is to be inscribed with the above list of names. Please send any information changes to above list, etc., to Federal Secretary, Box 2811W, G.P.O., Melbourne. at the earliest.

## TRY

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**GLORAD ENGINEERING SERVICES**  
186A Riversdale Rd., (Cr. Robinson Rd.)  
**HAWTHORN VICTORIA**

**Phones: Day—WA 3819. Night—WX 3440.**

only with Telcon and the match 208 on last lap new, building transmitter, all else ready for big finish.  
 240G cleaned up modulation troubles and preparing a 28 Mc beam. 28Z most impressed with v.h.f. and doing good work. 28A has been as ever and works all bands in between straightening out club rules and regulations. The Newcastle Radio Club was formed on 23rd April. 28AD experimenting with crystal filters when not DXing on 29 Mc. 28P still looking for eight more countries to make up 100 post-war on 28 Mc with 30 watts, using the same 807.

**CORALFIELDS AND LAKES**  
 28MI on 28 Mc regularly. DX no trouble. 28R at aether on 50 Mc with a new beam. 28EZ heard chasing the elusive whiff on 14 Mc. 28X, of Wyong is making a comeback and was heard on 28 Mc. 28Z another O.T. on 28 Mc. as guess Alex will shortly make the v.h.f.s. 28V using very beam on 28 Mc. look for him on 144 Mc. also. 28R chess 11 on 7 Mc.

28K near his 28 Mc phone W.A.S., 40 con fired all with 25 watts and two tube bluesheet! Three elements on 7 Mc. under way. 28T has nine gals and plans to do the above work. The 28L and 28E when time permits. 28K all to report 28L not too active, chiefly trying two half watts in 28 Mc. 28B still in 28 Mc. 28C on 144 Mc. 28H having 21Z and 28T from Mountains, 90 up sign on 28 Mc. phone.

**SOUTH COAST AND TABLELANDS**  
 Signs of activity are great in this region, but new sets do not make the difference. The New South Wales Amateur Radio Club is in full swing with 28AP as President. 28V Vice-President. 40C Treasurer. 28W Secretary. 28Y and 28Z are also members. The Club is being Wood-wagon's radio contacts into the Ham ranks. 28M building 100 watts in p.p. 28G, a v.h.f. to come along shortly. U.T. 28P is back on air with a 27p. 28K 100 28P 28G and 28H were all in the same net during the fracas. 28GZ has 14 inches of double cone vertical under way; but has 83K in a wind storm recently.

"LA has been working some time—well paper only allows a little time on 7 Mc. c.w. Reported 20X also migrated to the 20mc, enough down there for a nice field day. 3PI, at Canberra, with a most active list. One work has QRM from 28M. Same time on 14 Mc. from 28V 200 watts and 28K 100 two miles away what a QTH! 28JQ using a combined transmitter as v.h.f. and was recently heard from 28S whilst visiting Bathurst. 28M Canberra, on 7 Mc with 10 watts the 14 Mc and five tube super. Also active in 14 C.T. are 28I, 28M, 28P and 28GZ but no news. 28Y, 28Y, Goulburn, and 28JZ, Junee, active. 28V, 28T, 28Z, 28K not heard during last month but the guess is they are building for 14 Mc. 28L in 7 and 14 Mc. and doing nicely with lower power rig. 28W, Temora, some 28L, 28GZ, 28H, 28I, things being planned. 28K, West Wyalunga has dipole and v.h.f. completed the latter allowing CEs to move away from the crowd. Thanks to 28K and 28M for news on 7 Mc. but some one.

**SOUTHERN ZONE**  
 28VK busy servicing, but will be into the QRM shortly. 28U almost finished new rig, and has a panel; not so fortunate with the house project. Now that the 65 feet tower is upright 28U needs a little patience and dural tubing to finish the job. 28Q back in Albany from rural life. 28P on the way with three stages finishing with 807, may be a little time yet. 28AP building new oscillator for 28Q. 28R, 28A, 28C, 28E, 28F, 28G, 28H, 28I, 28J, 28K, 28L, 28M, 28N, 28O, 28P, 28Q, 28R, 28S, 28T, 28U, 28V, 28W, 28X, 28Y, 28Z, 28AA, 28AB, 28AC, 28AD, 28AE, 28AF, 28AG, 28AH, 28AI, 28AJ, 28AK, 28AL, 28AM, 28AN, 28AO, 28AP, 28AQ, 28AR, 28AS, 28AT, 28AU, 28AV, 28AW, 28AX, 28AY, 28AZ, 28BA, 28BB, 28BC, 28BD, 28BE, 28BF, 28BG, 28BH, 28BI, 28BJ, 28BK, 28BL, 28BM, 28BN, 28BO, 28BP, 28BQ, 28BR, 28BS, 28BT, 28BU, 28BV, 28BW, 28BX, 28BY, 28BZ, 28CA, 28CB, 28CC, 28CD, 28CE, 28CF, 28CG, 28CH, 28CI, 28CJ, 28CK, 28CL, 28CM, 28CN, 28CO, 28CP, 28CQ, 28CR, 28CS, 28CT, 28CU, 28CV, 28CW, 28CX, 28CY, 28CZ, 28DA, 28DB, 28DC, 28DD, 28DE, 28DF, 28DG, 28DH, 28DI, 28DJ, 28DK, 28DL, 28DM, 28DN, 28DO, 28DP, 28DQ, 28DR, 28DS, 28DT, 28DU, 28DV, 28DW, 28DX, 28DY, 28DZ, 28EA, 28EB, 28EC, 28ED, 28EE, 28EF, 28EG, 28EH, 28EI, 28EJ, 28EK, 28EL, 28EM, 28EN, 28EO, 28EP, 28EQ, 28ER, 28ES, 28ET, 28EU, 28EV, 28EW, 28EX, 28EY, 28EZ, 28FA, 28FB, 28FC, 28FD, 28FE, 28FF, 28FG, 28FH, 28FI, 28FJ, 28FK, 28FL, 28FM, 28FN, 28FO, 28FP, 28FQ, 28FR, 28FS, 28FT, 28FU, 28FV, 28FW, 28FX, 28FY, 28FZ, 28GA, 28GB, 28GC, 28GD, 28GE, 28GF, 28GG, 28GH, 28GI, 28GJ, 28GK, 28GL, 28GM, 28GN, 28GO, 28GP, 28GQ, 28GR, 28GS, 28GT, 28GU, 28GV, 28GW, 28GX, 28GY, 28GZ, 28HA, 28HB, 28HC, 28HD, 28HE, 28HF, 28HG, 28HH, 28HI, 28HJ, 28HK, 28HL, 28HM, 28HN, 28HO, 28HP, 28HQ, 28HR, 28HS, 28HT, 28HU, 28HV, 28HW, 28HX, 28HY, 28HZ, 28IA, 28IB, 28IC, 28ID, 28IE, 28IF, 28IG, 28IH, 28II, 28IJ, 28IK, 28IL, 28IM, 28IN, 28IO, 28IP, 28IQ, 28IR, 28IS, 28IT, 28IU, 28IV, 28IW, 28IX, 28IY, 28IZ, 28JA, 28JB, 28JC, 28JD, 28JE, 28JF, 28JG, 28JH, 28JI, 28JJ, 28JK, 28JL, 28JM, 28JN, 28JO, 28JP, 28JQ, 28JR, 28JS, 28JT, 28JU, 28JV, 28JW, 28JX, 28JY, 28JZ, 28KA, 28KB, 28KC, 28KD, 28KE, 28KF, 28KG, 28KH, 28KI, 28KJ, 28KL, 28KM, 28KN, 28KO, 28KP, 28KQ, 28KR, 28KS, 28KT, 28KU, 28KV, 28KW, 28KX, 28KY, 28KZ, 28LA, 28LB, 28LC, 28LD, 28LE, 28LF, 28LG, 28LH, 28LI, 28LJ, 28LK, 28LL, 28LM, 28LN, 28LO, 28LP, 28LQ, 28LR, 28LS, 28LT, 28LU, 28LV, 28LW, 28LX, 28LY, 28LZ, 28MA, 28MB, 28MC, 28MD, 28ME, 28MF, 28MG, 28MH, 28MI, 28MJ, 28MK, 28ML, 28MM, 28MN, 28MO, 28MP, 28MQ, 28MR, 28MS, 28MT, 28MU, 28MV, 28MW, 28MX, 28MY, 28MZ, 28NA, 28NB, 28NC, 28ND, 28NE, 28NF, 28NG, 28NH, 28NI, 28NJ, 28NK, 28NL, 28NM, 28NN, 28NO, 28NP, 28NQ, 28NR, 28NS, 28NT, 28NU, 28NV, 28NW, 28NX, 28NY, 28NZ, 28OA, 28OB, 28OC, 28OD, 28OE, 28OF, 28OG, 28OH, 28OI, 28OJ, 28OK, 28OL, 28OM, 28ON, 28OO, 28OP, 28OQ, 28OR, 28OS, 28OT, 28OU, 28OV, 28OW, 28OX, 28OY, 28OZ, 28PA, 28PB, 28PC, 28PD, 28PE, 28PF, 28PG, 28PH, 28PI, 28PJ, 28PK, 28PL, 28PM, 28PN, 28PO, 28PP, 28PQ, 28PR, 28PS, 28PT, 28PU, 28PV, 28PW, 28PX, 28PY, 28PZ, 28QA, 28QB, 28QC, 28QD, 28QE, 28QF, 28QG, 28QH, 28QI, 28QJ, 28QK, 28QL, 28QM, 28QN, 28QO, 28QP, 28QQ, 28QR, 28QS, 28QT, 28QU, 28QV, 28QW, 28QX, 28QY, 28QZ, 28RA, 28RB, 28RC, 28RD, 28RE, 28RF, 28RG, 28RH, 28RI, 28RJ, 28RK, 28RL, 28RM, 28RN, 28RO, 28RP, 28RQ, 28RR, 28RS, 28RT, 28RU, 28RV, 28RW, 28RX, 28RY, 28RZ, 28SA, 28SB, 28SC, 28SD, 28SE, 28SF, 28SG, 28SH, 28SI, 28SJ, 28SK, 28SL, 28SM, 28SN, 28SO, 28SP, 28SQ, 28SR, 28SS, 28ST, 28SU, 28SV, 28SW, 28SX, 28SY, 28SZ, 28TA, 28TB, 28TC, 28TD, 28TE, 28TF, 28TG, 28TH, 28TI, 28TJ, 28TK, 28TL, 28TM, 28TN, 28TO, 28TP, 28TQ, 28TR, 28TS, 28TT, 28TU, 28TV, 28TW, 28TX, 28TY, 28TZ, 28UA, 28UB, 28UC, 28UD, 28UE, 28UF, 28UG, 28UH, 28UI, 28UJ, 28UK, 28UL, 28UM, 28UN, 28UO, 28UP, 28UQ, 28UR, 28US, 28UT, 28UU, 28UV, 28UW, 28UX, 28UY, 28UZ, 28VA, 28VB, 28VC, 28VD, 28VE, 28VF, 28VG, 28VH, 28VI, 28VJ, 28VK, 28VL, 28VM, 28VN, 28VO, 28VP, 28VQ, 28VR, 28VS, 28VT, 28VU, 28VV, 28VW, 28VX, 28VY, 28VZ, 28WA, 28WB, 28WC, 28WD, 28WE, 28WF, 28WG, 28WH, 28WI, 28WJ, 28WK, 28WL, 28WM, 28WN, 28WO, 28WP, 28WQ, 28WR, 28WS, 28WT, 28WU, 28WV, 28WW, 28WX, 28WY, 28WZ, 28XA, 28XB, 28XC, 28XD, 28XE, 28XF, 28XG, 28XH, 28XI, 28XJ, 28XK, 28XL, 28XM, 28XN, 28XO, 28XP, 28XQ, 28XR, 28XS, 28XT, 28XU, 28XV, 28XW, 28XX, 28XY, 28XZ, 28YA, 28YB, 28YC, 28YD, 28YE, 28YF, 28YG, 28YH, 28YI, 28YJ, 28YK, 28YL, 28YM, 28YN, 28YO, 28YP, 28YQ, 28YR, 28YS, 28YT, 28YU, 28YV, 28YW, 28YX, 28YY, 28YZ, 28ZA, 28ZB, 28ZC, 28ZD, 28ZE, 28ZF, 28ZG, 28ZH, 28ZI, 28ZJ, 28ZK, 28ZL, 28ZM, 28ZN, 28ZO, 28ZP, 28ZQ, 28ZR, 28ZS, 28ZT, 28ZU, 28ZV, 28ZW, 28ZX, 28ZY, 28ZZ, 28AA, 28AB, 28AC, 28AD, 28AE, 28AF, 28AG, 28AH, 28AI, 28AJ, 28AK, 28AL, 28AM, 28AN, 28AO, 28AP, 28AQ, 28AR, 28AS, 28AT, 28AU, 28AV, 28AW, 28AX, 28AY, 28AZ, 28BA, 28BB, 28BC, 28BD, 28BE, 28BF, 28BG, 28BH, 28BI, 28BJ, 28BK, 28BL, 28BM, 28BN, 28BO, 28BP, 28BQ, 28BR, 28BS, 28BT, 28BU, 28BV, 28BW, 28BX, 28BY, 28BZ, 28CA, 28CB, 28CC, 28CD, 28CE, 28CF, 28CG, 28CH, 28CI, 28CJ, 28CK, 28CL, 28CM, 28CN, 28CO, 28CP, 28CQ, 28CR, 28CS, 28CT, 28CU, 28CV, 28CW, 28CX, 28CY, 28CZ, 28DA, 28DB, 28DC, 28DD, 28DE, 28DF, 28DG, 28DH, 28DI, 28DJ, 28DK, 28DL, 28DM, 28DN, 28DO, 28DP, 28DQ, 28DR, 28DS, 28DT, 28DU, 28DV, 28DW, 28DX, 28DY, 28DZ, 28EA, 28EB, 28EC, 28ED, 28EE, 28EF, 28EG, 28EH, 28EI, 28EJ, 28EK, 28EL, 28EM, 28EN, 28EO, 28EP, 28EQ, 28ER, 28ES, 28ET, 28EU, 28EV, 28EW, 28EX, 28EY, 28EZ, 28FA, 28FB, 28FC, 28FD, 28FE, 28FF, 28FG, 28FH, 28FI, 28FJ, 28FK, 28FL, 28FM, 28FN, 28FO, 28FP, 28FQ, 28FR, 28FS, 28FT, 28FU, 28FV, 28FW, 28FX, 28FY, 28FZ, 28GA, 28GB, 28GC, 28GD, 28GE, 28GF, 28GG, 28GH, 28GI, 28GJ, 28GK, 28GL, 28GM, 28GN, 28GO, 28GP, 28GQ, 28GR, 28GS, 28GT, 28GU, 28GV, 28GW, 28GX, 28GY, 28GZ, 28HA, 28HB, 28HC, 28HD, 28HE, 28HF, 28HG, 28HH, 28HI, 28HJ, 28HK, 28HL, 28HM, 28HN, 28HO, 28HP, 28HQ, 28HR, 28HS, 28HT, 28HU, 28HV, 28HW, 28HX, 28HY, 28HZ, 28IA, 28IB, 28IC, 28ID, 28IE, 28IF, 28IG, 28IH, 28II, 28IJ, 28IK, 28IL, 28IM, 28IN, 28IO, 28IP, 28IQ, 28IR, 28IS, 28IT, 28IU, 28IV, 28IW, 28IX, 28IY, 28IZ, 28JA, 28JB, 28JC, 28JD, 28JE, 28JF, 28JG, 28JH, 28JI, 28JJ, 28JK, 28JL, 28JM, 28JN, 28JO, 28JP, 28JQ, 28JR, 28JS, 28JT, 28JU, 28JV, 28JW, 28JX, 28JY, 28JZ, 28KA, 28KB, 28KC, 28KD, 28KE, 28KF, 28KG, 28KH, 28KI, 28KJ, 28KL, 28KM, 28KN, 28KO, 28KP, 28KQ, 28KR, 28KS, 28KT, 28KU, 28KV, 28KW, 28KX, 28KY, 28KZ, 28LA, 28LB, 28LC, 28LD, 28LE, 28LF, 28LG, 28LH, 28LI, 28LJ, 28LK, 28LM, 28LN, 28LO, 28LP, 28LQ, 28LR, 28LS, 28LT, 28LU, 28LV, 28LW, 28LX, 28LY, 28LZ, 28MA, 28MB, 28MC, 28MD, 28ME, 28MF, 28MG, 28MH, 28MI, 28MJ, 28MK, 28ML, 28MM, 28MN, 28MO, 28MP, 28MQ, 28MR, 28MS, 28MT, 28MU, 28MV, 28MW, 28MX, 28MY, 28MZ, 28NA, 28NB, 28NC, 28ND, 28NE, 28NF, 28NG, 28NH, 28NI, 28NJ, 28NK, 28NL, 28NM, 28NN, 28NO, 28NP, 28NQ, 28NR, 28NS, 28NT, 28NU, 28NV, 28NW, 28NX, 28NY, 28NZ, 28OA, 28OB, 28OC, 28OD, 28OE, 28OF, 28OG, 28OH, 28OI, 28OJ, 28OK, 28OL, 28OM, 28ON, 28OO, 28OP, 28OQ, 28OR, 28OS, 28OT, 28OU, 28OV, 28OW, 28OX, 28OY, 28OZ, 28PA, 28PB, 28PC, 28PD, 28PE, 28PF, 28PG, 28PH, 28PI, 28PJ, 28PK, 28PL, 28PM, 28PN, 28PO, 28PP, 28PQ, 28PR, 28PS, 28PT, 28PU, 28PV, 28PW, 28PX, 28PY, 28PZ, 28QA, 28QB, 28QC, 28QD, 28QE, 28QF, 28QG, 28QH, 28QI, 28QJ, 28QK, 28QL, 28QM, 28QN, 28QO, 28QP, 28QQ, 28QR, 28QS, 28QT, 28QU, 28QV, 28QW, 28QX, 28QY, 28QZ, 28RA, 28RB, 28RC, 28RD, 28RE, 28RF, 28RG, 28RH, 28RI, 28RJ, 28RK, 28RL, 28RM, 28RN, 28RO, 28RP, 28RQ, 28RR, 28RS, 28RT, 28RU, 28RV, 28RW, 28RX, 28RY, 28RZ, 28SA, 28SB, 28SC, 28SD, 28SE, 28SF, 28SG, 28SH, 28SI, 28SJ, 28SK, 28SL, 28SM, 28SN, 28SO, 28SP, 28SQ, 28SR, 28SS, 28ST, 28SU, 28SV, 28SW, 28SX, 28SY, 28SZ, 28TA, 28TB, 28TC, 28TD, 28TE, 28TF, 28TG, 28TH, 28TI, 28TJ, 28TK, 28TL, 28TM, 28TN, 28TO, 28TP, 28TQ, 28TR, 28TS, 28TT, 28TU, 28TV, 28TW, 28TX, 28TY, 28TZ, 28UA, 28UB, 28UC, 28UD, 28UE, 28UF, 28UG, 28UH, 28UI, 28UJ, 28UK, 28UL, 28UM, 28UN, 28UO, 28UP, 28UQ, 28UR, 28US, 28UT, 28UU, 28UV, 28UW, 28UX, 28UY, 28UZ, 28VA, 28VB, 28VC, 28VD, 28VE, 28VF, 28VG, 28VH, 28VI, 28VJ, 28VK, 28VL, 28VM, 28VN, 28VO, 28VP, 28VQ, 28VR, 28VS, 28VT, 28VU, 28VV, 28VW, 28VX, 28VY, 28VZ, 28WA, 28WB, 28WC, 28WD, 28WE, 28WF, 28WG, 28WH, 28WI, 28WJ, 28WK, 28WL, 28WM, 28WN, 28WO, 28WP, 28WQ, 28WR, 28WS, 28WT, 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28DF, 28DG, 28DH, 28DI, 28DJ, 28DK, 28DL, 28DM, 28DN, 28DO, 28DP, 28DQ, 28DR, 28DS, 28DT, 28DU, 28DV, 28DW, 28DX, 28DY, 28DZ, 28EA, 28EB, 28EC, 28ED, 28EE, 28EF, 28EG, 28EH, 28EI, 28EJ, 28EK, 28EL, 28EM, 28EN, 28EO, 28EP, 28EQ, 28ER, 28ES, 28ET, 28EU, 28EV, 28EW, 28EX, 28EY, 28EZ, 28FA, 28FB, 28FC, 28FD, 28FE, 28FF, 28FG, 28FH, 28FI, 28FJ, 28FK, 28FL, 28FM, 28FN, 28FO, 28FP, 28FQ, 28FR, 28FS, 28FT, 28FU, 28FV, 28FW, 28FX, 28FY, 28FZ, 28GA, 28GB, 28GC, 28GD, 28GE, 28GF, 28GG, 28GH, 28GI, 28GJ, 28GK, 28GL, 28GM, 28GN, 28GO, 28GP, 28GQ, 28GR, 28GS, 28GT, 28GU, 28GV, 28GW, 28GX, 28GY, 28GZ, 28HA, 28HB, 28HC, 28HD, 28HE, 28HF, 28HG, 28HH, 28HI, 28HJ, 28HK, 28HL, 28HM, 28HN, 28HO, 28HP, 28HQ, 28HR, 28HS, 28HT, 28HU, 28HV, 28HW, 28HX, 28HY, 28HZ, 28IA, 28IB, 28IC, 28ID, 28IE, 28IF, 28IG, 28IH, 28II, 28IJ, 28IK, 28IL, 28IM, 28IN, 28IO, 28IP, 28IQ, 28IR, 28IS, 28IT, 28IU, 28IV, 28IW, 28IX, 28IY, 28IZ, 28JA, 28JB, 28JC, 28JD, 28JE, 28JF, 28JG, 28JH, 28JI, 28JJ, 28JK, 28JL, 28JM, 28JN, 28JO, 28JP, 28JQ, 28JR, 28JS, 28JT, 28JU, 28JV, 28JW, 28JX, 28JY, 28JZ, 28KA, 28KB, 28KC, 28KD, 28KE, 28KF, 28KG, 28KH, 28KI, 28KJ, 28KL, 28KM, 28KN, 28KO, 28KP, 28KQ, 28KR, 28KS, 28KT, 28KU, 28KV, 28KW, 28KX, 28KY, 28KZ, 28LA, 28LB, 28LC, 28LD, 28LE, 28LF, 28LG, 28LH, 28LI, 28LJ, 28LK, 28LM, 28LN, 28LO, 28LP, 28LQ, 28LR, 28LS, 28LT, 28LU, 28LV, 28LW, 28LX, 28LY, 28LZ, 28MA, 28MB, 28MC, 28MD, 28ME, 28MF, 28MG, 28MH, 28MI, 28MJ, 28MK, 28ML, 28MM, 28MN, 28MO, 28MP, 28MQ, 28MR, 28MS, 28MT, 28MU, 28MV, 28MW, 28MX, 28MY, 28MZ, 28NA, 28NB, 28NC, 28ND, 28NE, 28NF, 28NG, 28NH, 28NI, 28NJ, 28NK, 28NL, 28NM, 28NN, 28NO, 28NP, 28NQ, 28NR, 28NS, 28NT, 28NU, 28NV, 28NW, 28NX, 28NY, 28NZ, 28OA, 28OB, 28OC, 28OD, 28OE, 28OF, 28OG, 28OH, 28OI, 28OJ, 28OK, 28OL, 28OM, 28ON, 28OO, 28OP, 28OQ, 28OR, 28OS, 28OT, 28OU, 28OV, 28OW, 28OX, 28OY, 28OZ, 28PA, 28PB, 28PC, 28PD, 28PE, 28PF, 28PG, 28PH, 28PI, 28PJ, 28PK, 28PL, 28PM, 28PN, 28PO, 28PP, 28PQ, 28PR, 28PS, 28PT, 28PU, 28PV, 28PW, 28PX, 28PY, 28PZ, 28QA, 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28CW, 28CX, 28CY, 28CZ, 28DA, 28DB, 28DC, 28DD, 28DE, 28DF, 28DG, 28DH, 28DI, 28DJ, 28DK, 28DL, 28DM,





of those Yankee up in the islands." Shades of Marconi and I can remember when a South American was considered something to write home about. I'm not sure about it, Amateur Radio is fast becoming a part of its glamour.

I like the story about the VK5 Ham who became involved with the idea that moving around in his country was a radio valve. Nothing that anyone could do or say would convince him otherwise now, as his mental condition was deteriorating. I believe he called his "Ham" Harrier (HAM) and then Adly (HAM) who finally agreed that the only way to cure the poor chap was to stage a mock execution and pretend to have removed a valve from his tummy. The Ham was quite agreeable to the operation, and while he was recovering from the anaesthetic, "Doc" and Russ secured an 807 valve and placed it beside his surgical table. When the Ham was awfully pained "Doc" said, "well old chap, you were right and we were wrong, then naturally was a radio valve in your tummy, and there it is." Turning a wisp toward the 807, the Ham said weakly "That's not the radio valve is my tummy, and it is."

It is reported as having a terrible crash when it is said to be coming from a men's train, the details of which are still in the "hot" stage. It must be good, because all the "Y's" we go on are talking about it in tones of awe. What about giving "Amateur Radio" exclusive rig to the story Tom.

During the previous last month, ALR was last night when a wife nudged him and said "Jack wake up, I just heard something go crack in your window room." "Let it go crack," said Jack and pulled the bed clothes over his head and snored. Jack is safe. But that such cowardice should be.

When VK5 works, VK5AB this month he was foolish enough to give the TV his nickname of "Tom". Now everybody is so treating him as "Tom" and asking him if he intends going to North America for his holidays.

He is that the one who has been warned of the very same old actions of two of the residents of that district who apparently had not the stress in a green Morris 8/40, and stop at every place and go through some peculiar antics with a little box to which is attached a small steel pin. From the conversation given it looks like that VK5, but what he would really they be like to be doing that for?

Was asking to one of our leading DX kings the other day, when his young son came up and said, "Dad, I'm sorry that it was the first day of the month. Who asked me to know this but he was proud because Dad's letters today all have fruit stickers."

Else Rossy built himself a "Plumbline" Delight. It is now known for the blunk was christened at a time when Rossy has called it plenty of other names. But this name was never mentioned. Last night he had a 20 foot ladder strapped to the side of the "Plumbline" ZZZPMRX and I would not be surprised to see his name in electric lights in the night sky.

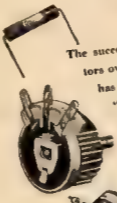
An enclosed rumour is going it, outside in VK5 to the effect that Mrs. Brown (EMB) has received his licence going to bring QRL in his vacation. If this be true, then all I can say is that it is indeed law news. Mrs. and his call has now been changed to VK5 with Amateur Radio for a year. It is that I came to the idea. I will be at all times beginning with VK5M and VK5L, at all times turned to assist it. Why have after success in was hard to get it. The mystery of it is that. But a lot of cutting out the fluff and I reaching only the necessary points, paid dividend. I am sure it is a perfect example of the ability in this direction. It is to be hoped that whenever it looks enough to secure his I should say so. Will fully appreciate the length to which he is attaining.

Apparently the poor conditions existing in VK5 have prompted most of my contacts for news to do it to the L.L. I take in some constructional work. It seems I which has prevented them from getting any of the said news, but with the help of the present condition, I will be back because much easier. A dickie bird has been seen by me, the L.L. Editor is coming back to see a bit in well by my own eye, and as I can see a bit with the best of them, this will be all for a month.

**WESTERN AUSTRALIA**

The May meeting was held on Monday 1st. There were 13 members attended, and a new member, Mr. Moore (on 8.25 coming up) was welcomed. VK5FB and VK5CN were visitors from Geraldton. They were very happy to meet each other. They had a very good time. More Perth jokes than last time. I got their car broke down en route to North

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Booth—(68C and 6W7)—as their programme went "bug-free." Anyway that was the year. We hope you have had a safe trip home this time.

QSL Officer VK6RU proposed a new system for handling QSL cards in VK6. The idea is similar to that used in South Africa, where amateurs buy gummed stickers at so much per 100, fix one sticker to each outgoing card, and hand them in to the Bureau. The only money transaction was the QSL Officer is when one buys a sheet of stickers. The proposed rate is 5/- per 100 stickers. This idea met the approval of Council and all present at the General Meeting.

The result of the poll as to the general feeling in VK6 about "Gremelin" was that only 36 votes were recorded, and 96 were in favour of "Gremelin" continuing in his present form.

The President brought up the matter about subscriptions for 1948. The financial year for 1948 commenced on 1st March. Any YOI financials the number of unfinancial members was not generally realised until 6WH made his statement. The idea of commencing the financial year on 1st March is to bring all YR States into line.

It was also announced by 6WH that any Disposals equipment available for VK6 Amateurs would be belated for in future. Serial numbers of the equipment concerned would be drawn against the applicant's name. This system will obviate any picking and choosing and seems to be the fairest method of distribution.

At the conclusion of general business the usual rag-chess followed. Then 6AG gave us a chat on his recent visit to Brisbane. He did manage to see a few sharks whilst there, and remarked on the hospitality and co-operation of the VK6s he did contact. (Thanks for helping our Secretary back to his camp VK41—26.)

Both 6RW and 6AG then gave a short lecture on the two units which 6AG brought back as samples from VK4. It looks as though supply will not meet demand.

The meeting officially closed at 10.30 p.m. and we were clear of the building ahead of schedule for once.

**PERSONALITIES**

6AG is at present visiting YK on business. No doubt Wally is checking up on the possibility of obtaining some more Disposals equipment that will be of interest to VK6s. We are anxious to hear all about it Wally. 6HD was pleasantly surprised

to hear Horrie burning up the ether around 28 Mc. Heard some 15 reports on his tour. 6SW has his 5C72B working nicely on 144 Mc. What's your best DX on 14 Mc. Ron? 6RT has staged a comeback on 7 Mc. Len must have seen May's Personalities before he went to print. Please do to hear you again Len. 6TX is a stalwart on 7 Mc, and Jack is considering giving some of his crystals a few rubs to dodge some of the QRM.

We don't hear 6MT because of skip distance, but we do hear the DX coming back to him. Nice work the YV on 50 watts. GAF is a 100 watt operator and has earned the list of African countries. 6TH, "Tommy Baker" now lives in, 6IK and he puts Bayswater on the 28 Mc. map. 6IK is going 100 watts and is re-building the rig. We are missing his presence on 7 and 14 Mc, but know he will soon be back better than ever. 630 spends a lot of time operating on all bands. He gives some really useful checks with his 150 equipment at Waltham. 6VW polishes the beans on 14 Mc. Guess he is hunting for a South American for his W.A.C. too.

6AW is getting a rig going on 144 Mc. and is apparently giving the DX bands the go-by for the time being. 6RC is really an O.T. and one of the firm hands in the VK6. Bert is still active on 7 and 14 Mc. and has some 150 contacts considering his low power and QTH. 6PD not heard so often lately, but when there's DX on 28 and 14 Mc, John is right on to it. 6AS is at present quiet because of a move to Cheltenham. But he will be with a good small rig going from up there. How about a few lines, or even a QSO would be better Allen? 6DF haven't heard Horrie for ages. The beam will go rusty if you don't use it. 6AH and 6BH are too busy for Amateur Radio these days, and the 7 Mc. SW can't make out the quietness over there. 6JH is still on the air on r.v. DX man, but can't say I have heard him on lately.

6JS is buying up a stack of necessary parts to put 100 watts into an 813. We'll be looking forward to working you again Jack. GFC re-broadcasts the W.A.C. news on 50 Mc. band once a week, but only the VK6s listen to him. Frank wants his W.A.S. and is waiting for a M.I.F. or T.I. to come his way. 6LW works at the same place as GFC and we have two words with a cheery thought. Wally's portable 80 Mc. rig has been doing some good trips lately. 6JG is still heard regularly on 7 Mc., but we know him long other ideas also!

Haven't heard 6KR for ages now. What's happening out there at Mr. Haverhill? 6LM is a going concern on 7 and 14 Mc. now, and we expect to hear him on 28 Mc. any day now, or did you say 144 Mc. Lionel! 6MD Mac had a visit from 67W last month, and we were like tennis balls and wishes. Sounds odd but that's the way things went! 6NC congratulations Nell on another harmonic—son and heir.

**DX OF APRIL—BY VK6RU**

Conditions on both 14 and 28 Mc. bands have shown a gradual falling off during this past month, particularly in regard to the latter band. Apart from this aspect, some choice stuff has been worked, as the following will show, but with the approach of winter we cannot expect band conditions to be what they were during the past interesting summer months.

28 Mc. Phone, Europe—Netherlands near so consistent these days, although on the few occasions that the band has been open, quite a few good QSOs have resulted. As from the old country have again been in the majority and those from the other nearby districts were F4CGR, OYR, 400, Holland; 4010, Belgium; GW4CC, Wales; QMSAA, SDAF, Scotland; IZ2, 1N0, 1B0, Italy; P8EO, SPA, 8TT, 8TT, France; O67TS, Denmark; ZB1R, 1AR, 1AR, 1AR; SM3PR and 3PL Sweden, and DA1QV U.S. Zone in Germany.

Africa—This continent is showing its usual behaviour for this time of the year in that most signals have been anything up to 89 and over on numerous occasions. Among the best signals from the Union boys were ZS6BY, 3W, 2AS, 6LR, 6CB, 6CH, 6KP, 631, 1AG, 6B0 and 50Q. From farther north came ZK1JB, 7JH, OQ6BQ, Belgian Congo; STEPM, Khartoum; VY4CQ, JHRP, Kenya, and 2D1AH Gold Coast, the latter being a most sought after contact for some months.

Asia—Apart from the usual 5 which seem ever present each day, the others worked were EQ2L, Pemia or Iran; HL1AJ, 1AU, Korea; V37RM, Ceylon; AP1D, 4D, 4B, Pakistan.

Oceania—With short skip conditions prevailing, contacts close to VK shores have been putting in signals mostly like local, 2L in particular.

North America—Earlier in the month we were worked quite freely and plentifully, but from about the 20th onward, a rapid falling off on the band was observed. Some QSOs resulted, but not with the consistency of those made earlier. Reliability of W and VK contacts is not expected for the en-

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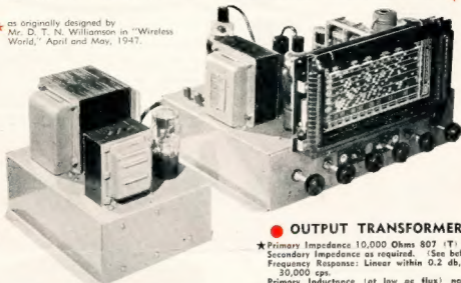
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1 P/Trans	25563	£4 18 8
1 Choke	102512	£1 16 1
1 Choke	201515	£1 11 10
1 Choke	50825	£1 7 7

## ● OUTPUT TRANSFORMER

★ Primary Impedance 10,000 Ohms 807 (T) P.P.  
Secondary Impedance as required. (See below).  
Frequency Response: Linear within 0.2 db, 20 cps. to 30,000 cps.  
Primary Inductance (at low ac flux) not less than 125 Henries.  
Leakage Inductance: 17 Millihenries.  
Insertion Loss: 0.4 Decibels.  
This transformer may be used to obtain a gain reduction of up to 25 db across 4 Stages in a suitable negative feedback circuit. ★

## ★ OUTPUT TRANSFORMERS

AF8	8 ohm	V/Coil
AF15	15 ohm	V/Coil
AF10	500 ohm	Line
	or as specified.	

PRICE £5/15/2

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#### **METROPOLIS '4'**

The popular Kit Assembly for A.C. use! It's a 4-valve Broadcast model with such quality features as Bakelite Cabinet, Rola Speaker with new Anisotropic Alnico, Aegis permeability iron-cored B/C Coils and Intermediates, Trimes Power Transformer, etc., and, of course, complete down to the last nut and bolt. The complete price, retail (sometimes slightly variable interstate), including Sales Tax **£11/17/6**  
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